

1 Mr and Mrs Clark and their three children live in the USA and take a holiday in Europe.

(a) Mr Clark changes \$500 into euros (€) when the exchange rate is €1 = \$1.4593.

Calculate how much he receives.
Give your answer correct to 2 decimal places.

Answer(a) € [2]

(b) Tickets for an amusement park cost €62 for an adult and €52 for a child.

Work out the cost for Mr and Mrs Clark and their three children to visit the park.

Answer(b) € [3]

(c) Mr Clark sees a notice:

| |
|---|
| <p style="text-align: center;">SPECIAL OFFER!</p> <p style="text-align: center;">Family ticket €200</p> |
|---|

Work out €200 as a percentage of your answer to **part (b)**.

Answer(c) % [1]

- (d) Mrs Clark buys 6 postcards at €0.98 each.
She pays with a €10 note.

Calculate how much change she will receive.

Answer(d) € [2]

- (e) Children under a height of 130 cm are not allowed on one of the rides in the park.
Helen Clark is 50 inches tall.

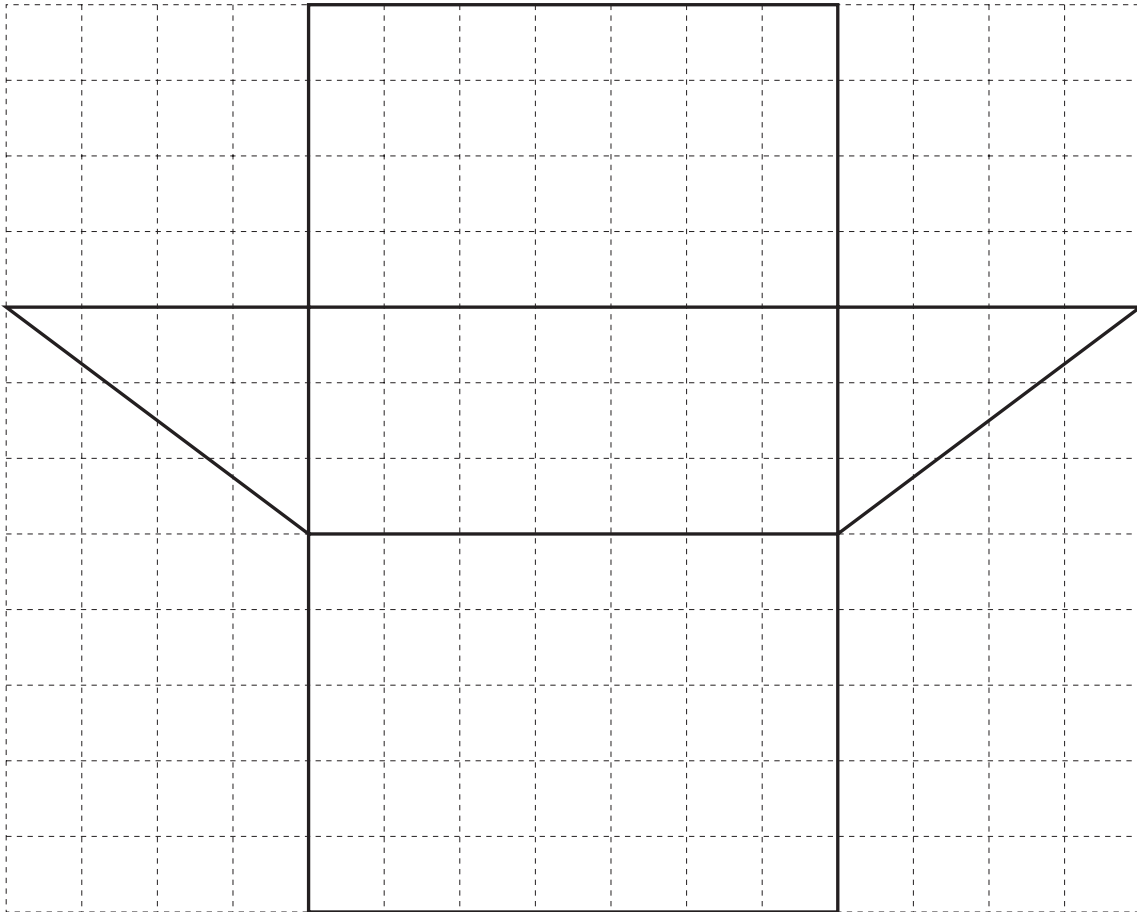
Use 1 inch = 2.54 cm to show that she will not be allowed on this ride.

Answer(e)

[1]

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2



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The shape above is the net of a solid drawn on a 1 cm square grid.

(a) Write down the geometrical name of the solid.

Answer(a) [1]

(b) Find the perimeter of the net.

Answer(b) cm [1]

(c) Work out

(i) the area of one of the triangles,

Answer(c)(i) cm^2 [2]

(ii) the volume of the solid.

Answer(c)(ii) cm^3 [2]

(d) A cuboid of length 4 cm and width 3 cm has the same volume as the solid.

Calculate the height of the cuboid.

Answer(d) cm [2]

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3 (a)

$$x = 3m - k$$

Find the value of

(i) x when $m = 2$ and $k = -4$,

Answer(a)(i) [2]

(ii) m when $x = 19$ and $k = 5$.

Answer(a)(ii) [3]

(b) Expand the brackets.

$$g(7f - g^2)$$

Answer(b) [2]

(c) Factorise completely.

$$18h^2 - 12hj$$

Answer(c) [2]

(d) Make m the subject of the formula.

$$t = 8m + 15$$

Answer(d) m = [2]

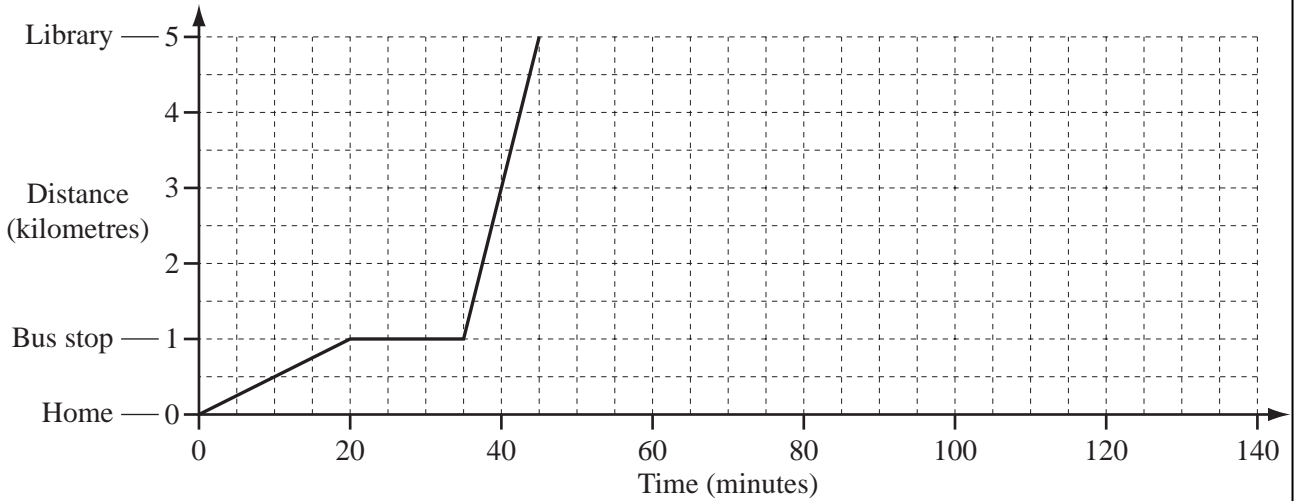
(e) Solve the equation.

$$p + 3 = 3(p - 5)$$

Answer(e) p = [3]

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Sonia travels from home to the library.
She walks to the bus stop and waits for a bus to take her to the library.

(a) Write down

(i) the distance to the bus stop,

Answer(a)(i) km [1]

(ii) how many minutes Sonia waits for a bus,

Answer(a)(ii) min [1]

(iii) how many minutes the bus journey takes to the library.

Answer(a)(iii) min [1]

(b) Calculate, in **kilometres per hour**,

(i) Sonia's walking speed,

Answer(b)(i) km/h [1]

(ii) the speed of the bus,

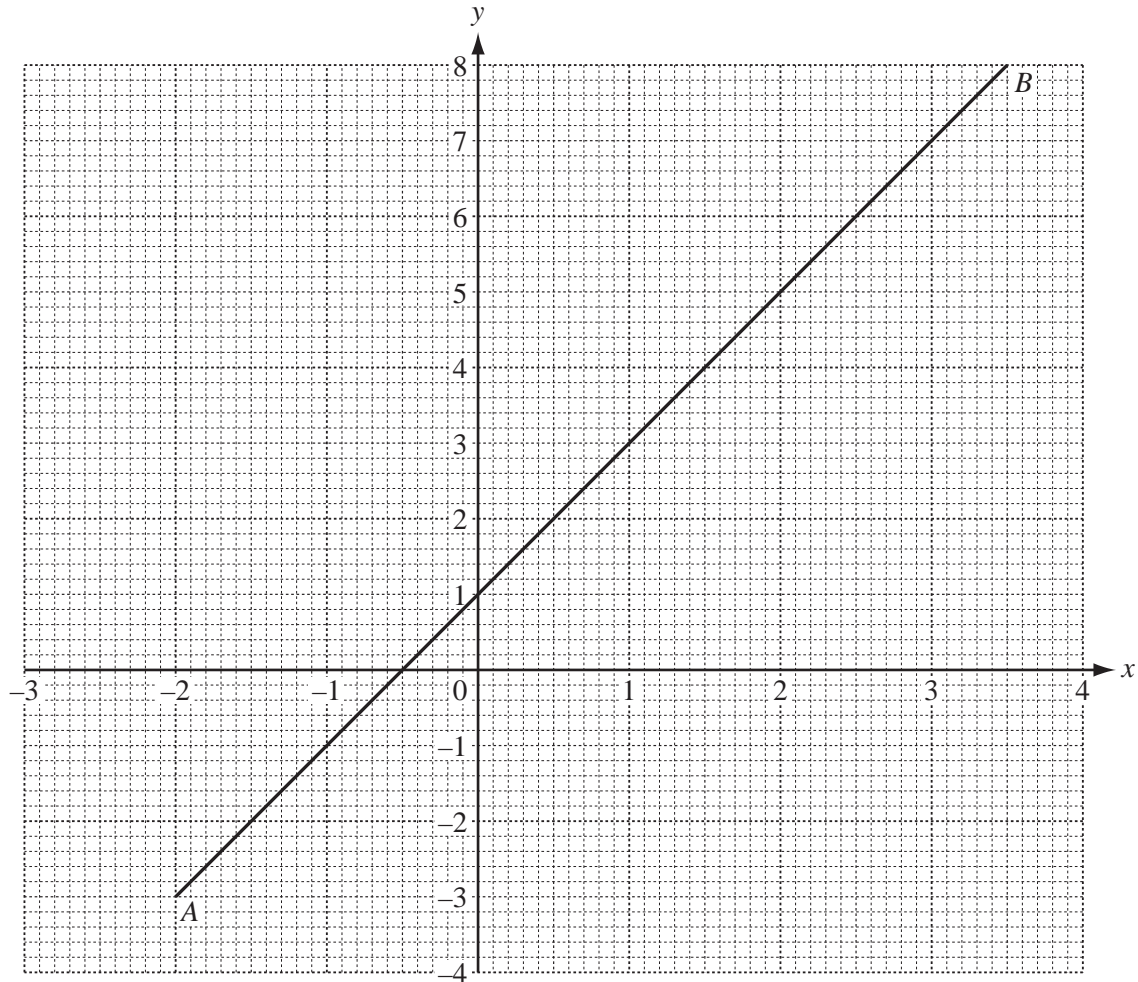
Answer(b)(ii) km/h [2]

(iii) the **average** speed for Sonia's journey from home to the library.

Answer(b)(iii) km/h [3]

(c) Sonia works in the library for one hour.
Then she travels home by car.
The average speed of the car is 30 km/h.

Complete the travel graph. [2]



- (a) (i) Find the gradient of the line AB .

Answer(a)(i) [2]

- (ii) Write down the equation of the line AB in the form $y = mx + c$.

Answer(a)(ii) $y =$ [2]

(b) The table shows some values of the function $y = x^2 - 2$.

| | | | | | | | |
|-----|----|----|----|---|----|---|---|
| x | -3 | -2 | -1 | 0 | 1 | 2 | 3 |
| y | 7 | | -1 | | -1 | | 7 |

- (i) Complete the table. [2]
- (ii) On the grid, draw the graph of $y = x^2 - 2$ for $-3 \leq x \leq 3$. [4]
- (iii) Use your graph to solve the equation $x^2 - 2 = 0$.

Answer(b)(iii) $x =$ or $x =$ [2]

(c) Write down the co-ordinates of the points where your graph meets the line AB .

Answer(c) (..... ,) and (..... ,) [2]

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6 (a) 103 112 125 132 144 159 161

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From the list above, write down

(i) a square number,

Answer(a)(i) [1]

(ii) a cube number,

Answer(a)(ii) [1]

(iii) a prime number,

Answer(a)(iii) [1]

(iv) an odd number which is a multiple of 3.

Answer(a)(iv) [1]

(b) Write 88 as a product of prime numbers.

Answer(b) [2]

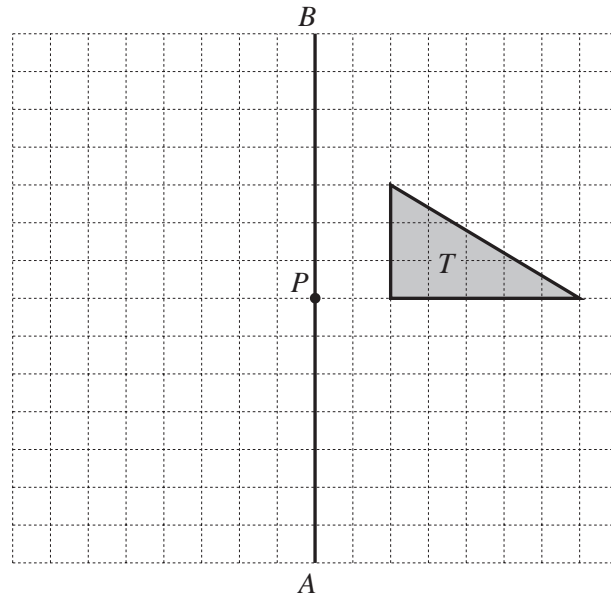
(c) Find the highest common factor of 72 and 96.

Answer(c) [2]

(d) Find the lowest common multiple of 15 and 20.

Answer(d) [2]

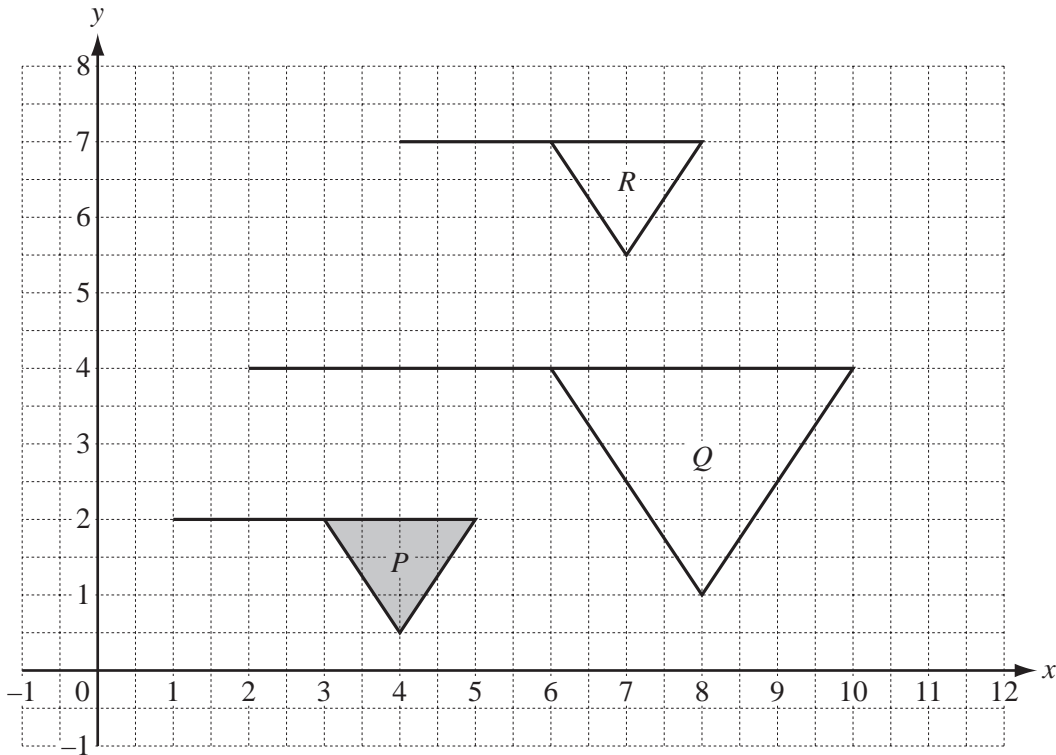
7 (a)



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- (i) Reflect triangle T in the line AB .
Label your image X . [1]
- (ii) Rotate triangle T through 90° clockwise about the point P .
Label your image Y . [2]

(b)



Describe the **single** transformation which maps

- (i) flag P onto flag Q ,
Answer(b)(i) [3]

- (ii) flag P onto flag R .
Answer(b)(ii) [2]

- 8 30 students took a vocabulary test.
The marks they scored are shown below.

| | | | | | |
|---|---|---|----|----|---|
| 7 | 8 | 5 | 8 | 3 | 2 |
| 6 | 6 | 3 | 3 | 6 | 2 |
| 7 | 1 | 5 | 10 | 2 | 6 |
| 6 | 5 | 8 | 1 | 2 | 7 |
| 3 | 1 | 5 | 3 | 10 | 3 |

- (a) Complete the frequency table below.

The first five frequencies have been completed for you.
You may use the tally column to help you.

| Mark | Tally | Frequency |
|------|-------|-----------|
| 1 | | 3 |
| 2 | | 4 |
| 3 | | 6 |
| 4 | | 0 |
| 5 | | 4 |
| 6 | | |
| 7 | | |
| 8 | | |
| 9 | | |
| 10 | | |

[3]

(b) (i) Find the range.

Answer(b)(i) [1]

(ii) Write down the mode.

Answer(b)(ii) [1]

(iii) Find the median.

Answer(b)(iii) [2]

(iv) Calculate the mean.

Answer(b)(iv) [3]

(c) A student is chosen at random.

Find the probability that the student scored

(i) 1 mark,

Answer(c)(i) [1]

(ii) 4 marks,

Answer(c)(ii) [1]

(iii) fewer than 6 marks.

Answer(c)(iii) [1]

- 9 (a) In the space below, construct the triangle ABC with $AB = 10$ cm and $AC = 12$ cm.
Leave in your construction arcs.
The line BC is already drawn.

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[2]

(b) Measure angle ABC .

Answer(b) Angle $ABC = \dots\dots\dots$ [1]

(c) (i) **Using a straight edge and compasses only**, and leaving in your construction arcs, construct the perpendicular bisector of BC . [2]

(ii) This bisector cuts AC at P .

Mark the position of P on the diagram and measure AP .

Answer(c)(ii) $AP = \dots\dots\dots$ cm [1]

(d) Construct the locus of all the points inside the triangle which are 5 cm from A . [1]

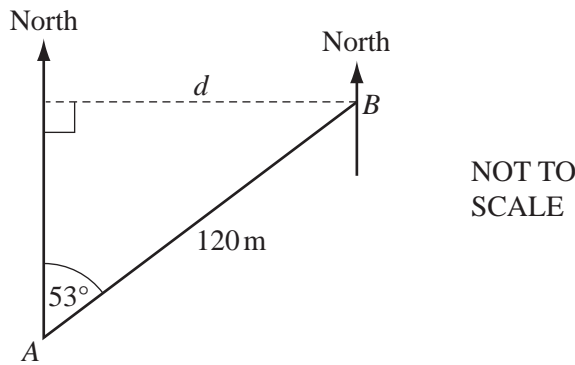
(e) Shade the region inside the triangle which is

- and
- nearer to B than to C
 - less than 5 cm from A . [2]

Question 10 is printed on the next page.

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10 (a)



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B is 120 m from A on a bearing of 053° .
Calculate

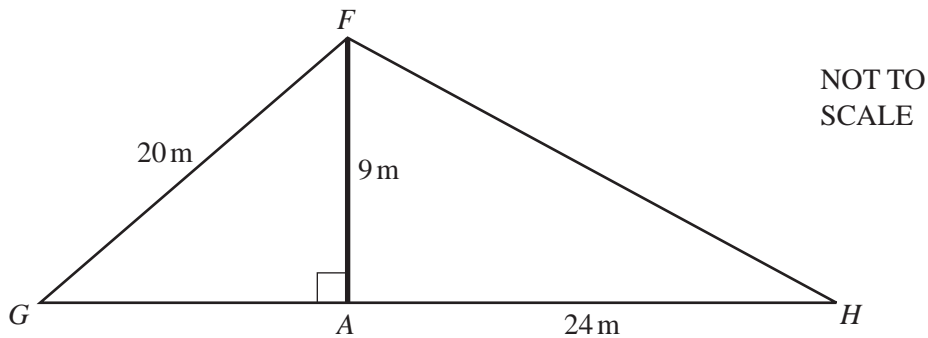
(i) the distance d ,

Answer(a)(i) $d = \dots\dots\dots$ m [2]

(ii) the bearing of A from B .

Answer(a)(ii) $\dots\dots\dots$ [1]

(b)



A vertical flagpole, AF , is 9 m high.
It is held in place by two straight wires FG and FH .
 $FG = 20$ m and $AH = 24$ m.
 G , A and H lie in a straight line on horizontal ground.
Calculate

(i) angle FHA ,

Answer(b)(i) Angle $FHA = \dots\dots\dots$ [2]

(ii) the distance GA .

Answer(b)(ii) $GA = \dots\dots\dots$ m [3]

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